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Asymptotic normality of kernel type density estimators for random fields

Fazekas I., Chuprunov A.
Kazan Federal University, 420008, Kremlevskaya 18, Kazan, Russia

Abstract

Kernel type density estimators are studied for random fields. It is proved that the estimators are asymptotically normal if the set of locations of observations become more and more dense in an increasing sequence of domains. It turns out that in our setting the covariance structure of the limiting normal distribution can be a combination of those of the continuous parameter and the discrete parameter cases. The proof is based on a new central limit theorem for α-mixing random fields. Simulation results support our theorems. © Springer 2006.

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Keywords

α-mixing, Asymptotic normality of estimators, Central limit theorem, Density estimator, Increasing domain asymptotics, Infill asymptotics, Kernel, Random field